

19. (Currently amended) A stopper (11) for closing ~~[[the]]~~an opening formed at an end (12) of a tubular manifold (1), said stopper having an internal face (15)~~[[,]]~~ provided with a housing (19) formed along an external edge (13) of the stopper and a plurality of projections (20) receiving means (19, 20) for holding a preformed filler metal (18) in proximity to the surface of the manifold forming a junction to be brazed.

REMARKS

This amendment is intended as a full and complete response to the non-final Office Action dated September 6, 2005. In the Office Action, Claims 1-19 are pending, of which Claims 1-19 are rejected. By this amendment, Claims 1, 6, 7, 10-15, 18 and 19 have been amended, Claims 5, 16 and 17 have been canceled, and Claims 2-4, 8 and 9 continue unamended.

In view of both the amendments presented above and the following discussion, it is submitted that none of the claims now pending in the application are indefinite, anticipated or obvious under 35 U.S.C. § 112, § 102 and § 103. Thus, it is believed that all of these claims are now in allowable form.

CLAIM REJECTIONS:

A. 35 USC § 112

Claim 18 is rejected under 35 U.S.C. §112 as being indefinite for including elements not actually disclosed. In particular, the Office Action states that the feature “towel-rack type radiator” renders the claim indefinite. The rejection is respectfully traversed.

Claim 18 has been amended to particularly point out and distinctly claim the subject matter which is regarded as the invention. In particular, Claim 18, as amended, to change the feature “towel-rack type radiator” to “towel-rack radiator.” Claim 18 has also been amended to change the dependency from canceled claim 5 to independent claim 1.

It is submitted that dependent claim 18, as amended herein, is not indefinite and fully

satisfies the requirements under 35 U.S.C. §112 and is patentable thereunder. Therefore, it is respectfully requested that the rejections be withdrawn.

B. 35 U.S.C. §102

1. Claims 1-5, 13-16, 18 and 19.

Claims 1-5, 13-16, 18 and 19 are rejected as being anticipated by US Patent 3,310,869 to Porte et al. (hereinafter "Porte"). The rejection is respectfully traversed.

a. Claims 5 and 16

Claims 5 and 16 have been canceled. Therefore the rejection regarding these claims is now considered moot.

b. Claims 1-4, 13-15 and 19

Independent Claims 1, 13 and 19 have been amended to further clarify the features considered inventive. In particular, independent Claim 1 (and similarly, independent claims 13 and 19), as amended, recites:

A brazing process to join two metal parts, said metal parts including (i) a tube (1) having an end (4), and (ii) a tubular metal part (3) having a lateral wall (2), wherein the end (4) of said tube (3) is brazed into a hole provided in the lateral wall (2) of said tubular metal part (3), the process comprising the steps of:
positioning a brazing filler metal (5, 6) on the end (4) of said tube (3);
fixedly aligning the metal parts to be joined, wherein said filler metal is positioned inside said tubular metal part prior to melting;
heating said metal parts to a temperature at which the filler metal melts.
(Emphasis added).

As a preliminary matter, we believe that it would be helpful to review the appropriate standard under 35 U.S.C. § 102 for analyzing the features of a claim with respect to the prior art. It is well settled that "[a]nticipation requires the presence in a single prior art reference

disclosure of each and every element of the claimed invention, arranged as in the claim” (Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984)(citing Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (emphasis added). The cited reference fails to disclose each and every element of the claimed invention, as arranged in the claim.

According to Porte et al., when tubes 11 are to be joined into holes 15a of the lateral walls of tanks 13 and 14 (see figure 1), the filler metal is provided in the form of sheets 20, which can be placed only outside both tubular parts, and must be produced with a special shape. The shape of the tubes and of the holes according to the cited document is not suited to an internal placement of the filler and no teaching on how to do so can be found. The amount of filler metal is considerable and dripping easily occurs.

By contrast, the Applicant’s invention includes a step where the “filler metal is positioned inside said tubular metal part prior to melting.” In particular, “[a]ccording to a first aspect of the invention, the filler metal is positioned onto the external surface of the end of the tubes, which is then inserted into the hole in the appropriate position, so as that the filler metal finds itself inside the manifold in proximity to the junction to be brazed, so as to be able to be drawn by capillary action into the clearance space in said junction once melted. The tubes and the manifolds are inserted into the furnace to cause the melting of the filler metal.” (See specification, page 7, lines 10-16, and FIGS 1-4). Since the Porte patent fails to teach the claimed feature of “said filler metal is positioned inside said tubular metal part prior to melting,” the Porte patent fails to teach each and every element of the claimed invention, as arranged in the claim.

It is submitted that independent claim 1, and similarly independent claims 13 and 19, are not anticipated and fully satisfies the requirements under 35 U.S.C. §102 and are patentable thereunder.

Furthermore, claims 2-4, 14 and 15 depend, either directly or indirectly from independent claims 1 and 13 and recite additional features that the Applicant considers as being inventive. It is submitted that these dependent claims are not anticipated and fully satisfy the requirements under 35 U.S.C. §102 and are patentable thereunder. Therefore, it is respectfully requested that the rejections be withdrawn.

2. Claims 1-8 and 18

Claims 1-8 and 18 are rejected as being anticipated by US Patent 5,360,158 to Conn et al. (hereinafter "Conn"). The rejection is respectfully traversed.

As discussed above, dependent claim 5 is canceled and independent Claim 1 has been amended to further clarify the features considered inventive. The Conn patent fails to teach the claimed feature of "said filler metal is positioned inside said tubular metal part prior to melting."

In particular, Conn merely teaches to place the filler metal outside the tubular parts to be joined, as shown by figure 2. By contrast, the Applicant's invention includes a step where the "filler metal is positioned inside said tubular metal part prior to melting."

It is submitted that independent claim 1 is not anticipated and fully satisfies the requirements under 35 U.S.C. §102 and is patentable thereunder. Furthermore, claims 2-4, 6-8 and 18 depend, either directly or indirectly from independent claim 1 and recite additional features that the Applicant considers as being inventive. It is submitted that these dependent claims are not anticipated and fully satisfy the requirements under 35 U.S.C. §102 and are patentable thereunder. Therefore, it is respectfully requested that the rejections be withdrawn.

3. Claims 1-4

Claims 1-4 are rejected as being anticipated by US Patent 2,157,918 to Rankin (hereinafter "Rankin"). The rejection is respectfully traversed.

As discussed above, dependent claim 5 is canceled and independent Claim 1 has been

amended to further clarify the features considered inventive. The Rankin patent fails to teach the claimed feature of “said filler metal is positioned inside said tubular metal part prior to melting.”

In particular, Rankin teaches a process where a flange is placed around a pipe by brazing. However, such teachings do not relate to brazing a tube into the lateral wall of another tubular part. As discussed above, the Applicant’s invention includes a step where the “filler metal is positioned inside said tubular metal part prior to melting.”

It is submitted that independent claim 1 is not anticipated and fully satisfies the requirements under 35 U.S.C. §102 and is patentable thereunder. Furthermore, claims 2-4 depend, either directly or indirectly from independent claim 1 and recite additional features that the Applicant considers as being inventive. It is submitted that these dependent claims are not anticipated and fully satisfy the requirements under 35 U.S.C. §102 and are patentable thereunder. Therefore, it is respectfully requested that the rejections be withdrawn.

C. 35 U.S.C. §103

1. Claims 6-10 and 12.

Claims 6-10 and 12 are rejected as being obvious over US Patent 3,310,869 to Porte et al (hereinafter "Porte") in view of U.S. Patent 3,291,962 to Walker. The rejection is respectfully traversed.

As a preliminary matter, we believe that it would be helpful to review the appropriate standard under 35 U.S.C. § 103 for analyzing the features of a claim with respect to the prior art. The test under 35 U.S.C. §103 is not whether an improvement or a use set forth in a patent would have been obvious or non-obvious; rather the test is whether the claimed invention, considered as a whole, would have been obvious. Jones v. Hardy, 110 U.S.P.Q. 1021, 1024 (Fed. Cir. 1984) (Emphasis added). The combination of the '464 Patent in view of Rasmussen fails to teach or suggest the invention as a whole.

Claims 6-10 and 12 depend from independent claim 1 and recite additional features the Applicant considers as being inventive. Dependent claims 6-10 and 12 recite in part:

A brazing process to join two metal parts, said metal parts including (i) a tube (1) having an end (4), and (ii) a tubular metal part (3) having a lateral wall (2), wherein the end (4) of said tube (3) is brazed into a hole provided in the lateral wall (2) of said tubular metal part (3), the process comprising the steps of:
positioning a brazing filler metal (5, 6) on the end (4) of said tube (3);
fixedly aligning the metal parts to be joined, wherein said filler metal is positioned inside said tubular metal part prior to melting;
heating said metal parts to a temperature at which the filler metal melts. (Emphasis added).

As discussed above in response to the §102 rejection, the Porte patent fails to teach, or even suggest the claimed feature of “wherein said filler metal is positioned inside said tubular metal part prior to melting.”

The Walker patent fails to bridge the substantial gap as between the Porte patent and the Applicants’ invention. In particular, the Walker patent discloses an electric arc welding process (see for example col. 2. Lines 11-16, lines 33-40, lines 52 -59 and figure 2), wherein the filler metal is deposited from an electrode as the welding process is performed. In an assembly such as that disclosed by the Walker patent, such welding process can only be performed from the outside of the component being welded. Thus, Walker teaches away from the Applicant’s claimed invention.

Furthermore, it is submitted that the Porte and Walker patents cannot be operably combined in view of the amended claims. In particular, an electric arc welding is a completely different process from a brazing process. The filler metal, of the same kind of that of the parts to be joined, is provided during heating and cannot be pre-positioned. Partial melting of the parts to be joined also occurs. By contrast, brazing includes using a metal that is different from the type of metals that are being joined, where the filler metal has a melting temperature that is lower than the melting temperature of the metal parts to be joined. Accordingly, those skilled in the art would not combine a welding process such as that taught by Walker, with a brazing process such

as that of Porte for the presently claimed process.

Moreover, the combination of the Porte and Walker patents fails to address and solve the problems solved by the Applicants' invention. Specifically, the invention as a whole is not restricted to the subject matter claimed, but also embraces its properties and the problem it solves. In Re Wright, 6 U.S.P.Q. 2d 1959, 1961 (Fed. Cir. 1988) (emphasis added).

Positioning according to the present invention brings about the following advantages. Since the molten metal runs along the surfaces due to capillarity, the fact that the end of the tube protrudes for a defined length into the wall of the tubular part, causes the metal to distribute more evenly between the parts to be joined (see FIGS. 2 and 4 of Applicant' drawings). Accordingly, a more precise positioning of the filler, close or in correspondence of the junction to be formed is possible, and its amount can be reduced. Moreover, if dripping of the filler occurs, it will not damage the furnace where the process is performed, which is important when automatic machinery is employed. Further, a better aesthetic result is also obtained, since no excess of filler metal remains on the outside surfaces of the end product. The present application teaches several preferred ways to position the filler metal in the correct place, ways which are well suited to full automatic operation, and teaches the corresponding shapes that the parts to be joined should have.

Thus, the combination of the Porte and Walker patents fails to teach or suggest the Applicants' invention as a whole, since the combination fails to teach or suggest "wherein said filler metal is positioned inside said tubular metal part prior to melting."

As such, it is submitted that dependent claims 6-10 and 12 are not obvious, and fully satisfy the requirements under 35 USC § 103 and are patentable thereunder. Therefore, it is respectfully requested that the rejections be withdrawn.

Conclusion

In view of both the amendments and discussion presented herein, it is respectfully submitted that the present Amendment responds to all of the issues raised in the Office Action. Thus, it is submitted that Claims 1-20 are in condition for allowance. Accordingly, reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues in any of the claims now pending in the application, we respectfully request that the Examiner telephone Steven M. Hertzberg or Thomas E. Spath at (212) 949-9022 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Extension of Time

The Applicant requests that a one month extension of time from December 6, 2005 to January 6, 2006 be granted. The Commissioner is hereby authorized to charge the extension fee or any other fees, or to credit any overpayment, due by reason of this Amendment to Deposit Account No. 01-0035.

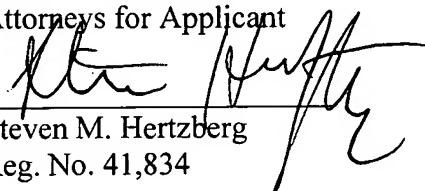
Change of Address

Please note the new address set forth on the concurrently-filed Change of Address notice. The Examiner's assistance is respectfully requested in assuring that the new address (which also appears below) is entered in the Office records for all future correspondence.

All correspondence should continue to be directed to the address below.

Respectfully submitted,

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